

advantage incorporated in the overall pulley-actuator system, additional bending forces being applied to the primary limb at points intermediate the limb ends, additional vibration damping to the primary limb upon release, and a shorter extended actuator length that has to be accelerated forward on release.

## **VI. Claims of the Invention:**

Having described the prior art and the preferred embodiment(s) of my invention, I now claim the following:

**Claim #1:** A compound bow having asynchronous primary limb and primary pulley-actuator operation, wherein no actuator segment, except the bowstring section used to draw the bow, extends past the vertical center of the bows riser segment, which asynchronous operation incorporates a minimum of one dual-planar primary leverage inducing pulley, and a pulley-return-energy-storage-source (PRES) incorporated in the bows overall configuration at (at) least one end of the bow, said bow incorporating in addition to the primary leverage inducing pulley mounted proximate the end of at least one of the bows primary limbs, a minimum of one additional simple intermediate pulley incorporated in the PRES extension located at the same end of the bow, which intermediate pulley engages an extended actuator length coming from the primary leverage inducing pulley, and which extended actuator length thereafter continues on to and is terminated at a point intermediate the ends of the primary limb mounted on the same end of the bows riser section that the primary pulley that the extended actuator length emanates from is mounted at.

**Claim #2:** A compound bow having asynchronous primary limb and primary pulley-actuator operation, wherein no actuator segment, except the bowstring section used to draw the bow, extends past the vertical center of the bows riser segment, which asynchronous operation incorporates a minimum of one dual-planar primary leverage inducing pulley, and a pulley-return-energy-storage-source (PRES) incorporated in the bows overall configuration at (at) least one end of the bow, said bow incorporating in addition to the primary leverage inducing pulley mounted proximate the end of at least one of the bows primary limbs, a minimum of one

additional simple intermediate pulley incorporated in the PRES extension located at the same end of the bow, which intermediate pulley engages an extended actuator length coming from the primary leverage inducing pulley, and which extended actuator length thereafter continues on to and is terminated at a point on the bows riser section at the same end of the bows riser section that the primary pulley that the extended actuator length emanates from is mounted at.

**Claim #3:** A compound bow having asynchronous primary limb and primary pulley-actuator operation, wherein no actuator segment, except the bowstring section used to draw the bow, extends past the vertical center of the bows riser segment, which asynchronous operation incorporates a minimum of one dual-planar primary leverage inducing pulley, and a pulley-return-energy-storage-source (PRES) incorporated in the bows overall configuration at (at) least one end of the bow, said bow incorporating in addition to the primary leverage inducing pulley mounted proximate the end of the bows primary limb at the same end of the bow, a minimum of one additional simple intermediate pulley incorporated in the PRES extension located at the same end of the bow, which intermediate pulley engages an extended actuator length coming from the primary leverage inducing pulley, and which extended actuator length thereafter continues on to and engages a minimum of one more intermediate pulley that is fixed in place at a point intermediate the ends of the primary limb at the same end of the bow, and which extended actuator length then continues to a termination point intermediate the ends of the PRES extension located at the same end of the bow that the primary pulley that the extended actuator length emanates from is mounted at.

**Claim #4:** A compound bow having asynchronous primary limb and primary pulley-actuator operation, wherein no actuator segment, except the bowstring section used to draw the bow, extends past the vertical center of the bows riser segment, which asynchronous operation incorporates a minimum of one dual-planar primary leverage inducing pulley, and a pulley-return-energy-storage-source (PRES) incorporated in the bows overall configuration at (at) least one end of the bow, said bow incorporating in addition to the primary leverage inducing pulley mounted proximate the end of the bows primary limb at the same end of the bow, a minimum of one additional simple intermediate pulley incorporated in the PRES extension located at the same end of the bow, which intermediate pulley engages an extended actuator length coming

from the primary leverage inducing pulley, and which extended actuator length thereafter continues on to and engages a minimum of one more intermediate pulley that is fixed in place at a point intermediate the ends of the primary limb at the same end of the bow, and which extended actuator length then continues to a termination point on the bows riser section, said termination point being located at the same end of the bow that the primary pulley that the extended actuator length emanates from is mounted at.